WHAT IS CLAIMED IS:

1. A method for preparing a cyclohexyl phenyl ketone from a 1,3-butadiene and an acrylic acid, the method comprising:

(a) carrying out a [2+4] Diels-Alder reaction of the 1,3-butadiene and the acrylic acid in the presence or absence of a solvent to prepare a 3-cyclohexene-1-carboxylic acid;

(b) carrying out a hydrogenation reaction of the 3-cyclohexene-1-carboxylic acid to prepare a cyclohexanecarboxylic acid;

(c) carrying out a chlorination reaction in the solution of the cyclohexanecarboxylic acid without separation or purification of the cyclohexanecarboxylic acid to prepare a cyclohexanecarbonyl chloride; and

(d) continuously carrying out a Friedel-Crafts reaction of the cyclohexanecarbonyl chloride in the same reactor without separation or purification of an intermediate to prepare a cyclohexyl phenyl ketone.

2. The method as claimed in claim 1, the solvent includes benzene or a non-aromatic organic solvent.

3. The method as claimed in claim 2, the non-aromatic organic solvent includes cyclohexane, hexane, heptane, octane, tetrahydrofuran, dioxane, ether, and a mixture thereof.

4. The method as claimed in claim 1, the [2+4] Diels-Alder reaction is carried out in the presence of a polymerization inhibitor in the temperature range of 80 to 200°C.

5. The method as claimed in claim 1, the hydrogenation reaction being carried out in the temperature range of 80 to 120°C with a hydrogen pressure of 80 to 120 psi.

6. The method as claimed in claim 1, the chlorination reaction is carried out using thionyl chloride or phosphorous trichloride.

7. The method as claimed in claim 1, the chlorination reaction is carried out using thionyl chloride or phosphorous trichloride at an equivalence ratio of 1 to 2 with respect to the cyclohexane carboxylic acid.

8. The method as claimed in claim 6, the chlorination reaction is carried out using thionyl chloride or phosphorous trichloride at an equivalence ratio of 1 to 2 with respect to the cyclohexane carboxylic acid.

9. The method as claimed in claim 1, the Friedel-Crafts reaction is carried out in the presence of an anhydrous aluminum trichloride catalyst.

10. The method as claimed in claim 1, the Friedel-Crafts reaction is carried out in the presence of an anhydrous aluminum trichloride at an equivalence ratio of 1 to 3 with respect to the cyclohexane carbonyl chloride.

11. The method as claimed in claim 9, the Friedel-Crafts reaction is carried out in the presence of an anhydrous aluminum trichloride at an equivalence ratio of 1 to 3 with respect to the cyclohexane carbonyl chloride.